

## APPENDIX 5A. SUPPLEMENTARY ENGINEERING ANALYSIS RESULTS

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This appendix provides supplementary results from the Engineering Analysis, including information about the distributions by price for each of the representative units analyzed. The supplementary results include the following:

1. No-load (core) losses versus manufacturer's selling price
2. Load-losses (coil) versus manufacturer's selling price
3. Transformer weight versus manufacturer's selling price

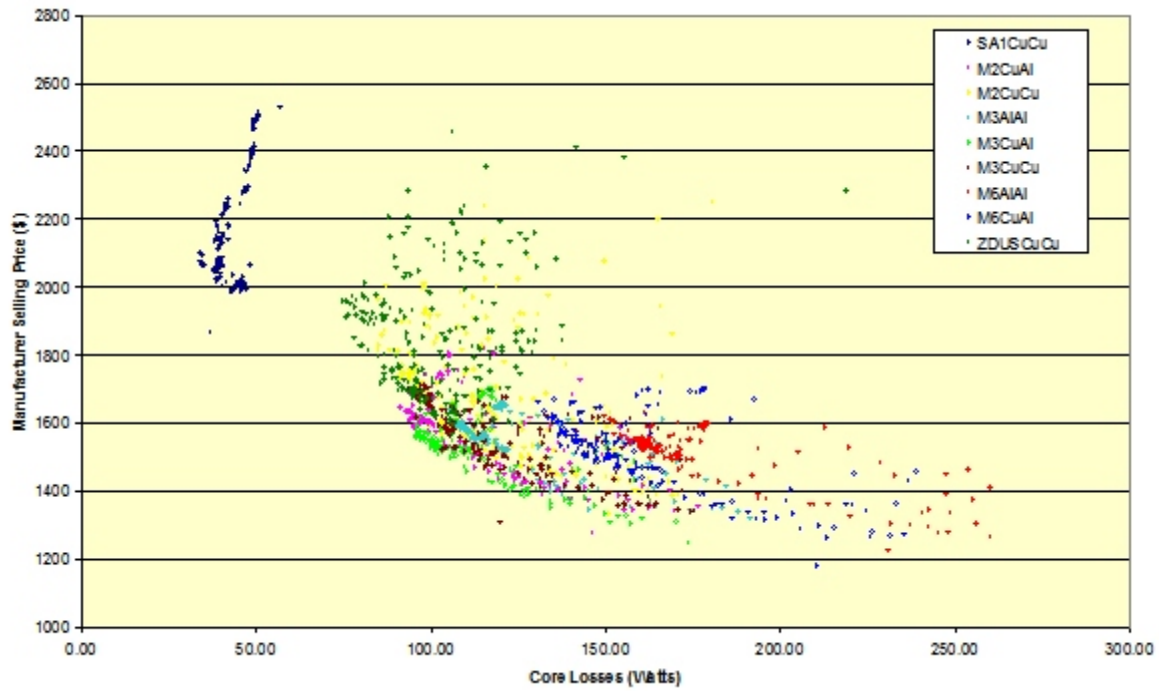
Table 5.2.2 from Chapter 5 is reproduced as Table 5A.1 below for reference, and provides a summary of the engineering design lines and the specifications of each of the representative units.

**Table 5A.1 Engineering Design Lines and Representative Units for Analysis**

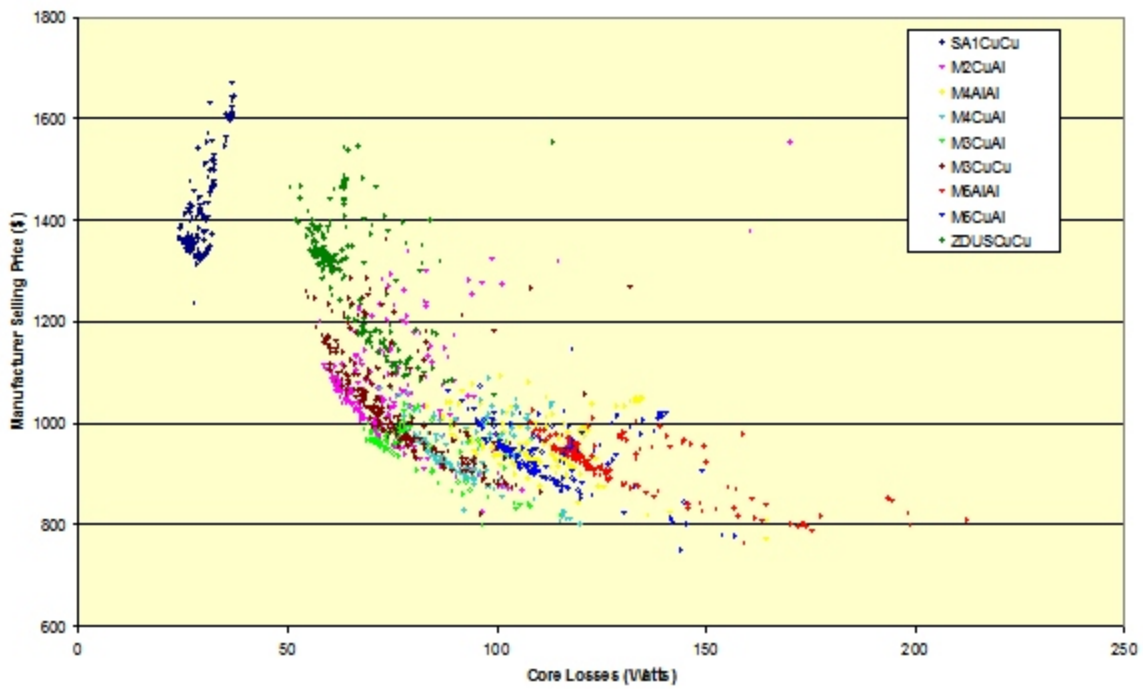
PC*	DL	Type of Distribution Transformer	kVA Range	Voltage Taps	Secondary Voltages	Engineering Design Line Representative Unit
1	1	Liquid-immersed, medium-voltage, single-phase, rectangular tank	10-100	±2-2.5%	240/120 to 600V	50kVA, 65°C, single-phase, 60Hz, 7200V primary, 240/120V secondary, rectangular tank
	2	Liquid-immersed, medium-voltage, single-phase, round tank	10-100	±2-2.5%	120/240 to 600V	25kVA, 65°C, single-phase, 60Hz, 24940GrdY/14400V primary, 120/240V secondary, round tank
	3	Liquid-immersed, medium-voltage, single-phase	167-833	±2-2.5%	120/240 to 600V	500kVA, 65°C, single-phase, 60Hz, 14400/24940YV primary, 277/480YV secondary
2	4	Liquid-immersed, medium-voltage, three-phase	15-500	±2-2.5%	208Y/120 to 600V	150kVA, 65°C, three-phase, 60Hz, 12470Y/7200V primary, 208Y/120V secondary
	5	Liquid-immersed, medium-voltage, three-phase	750-2500	±2-2.5%	208Y/120 to 600Y/347V	1500kVA, 65°C, three-phase, 60Hz, 24940GrdY/14400V primary, 480Y/277V secondary
3	6	Dry-type, low-voltage, single-phase	15-333	Universal**	120/240 to 600V	25kVA, 150°C, single-phase, 60Hz, 480V primary, 120/240V secondary, 10kV BIL
4	7	Dry-type, low-voltage, three-phase	15-150	Universal**	208Y/120 to 600Y/347V	75kVA, 150°C, three-phase, 60Hz, 480V primary, 208Y/120V secondary, 10kV BIL
	8	Dry-type, low-voltage, three-phase	225-1000	Universal**	208Y/120 to 600Y/347V	300kVA, 150°C, three-phase, 60Hz, 480V Delta primary, 208Y/120V secondary, 10kV BIL
6	9	Dry-type, medium-voltage, three-phase, 20-45kV BIL	15-500	±2-2.5%	208Y/120 to 600Y/347V	300kVA, 150°C, three-phase, 60Hz, 4160V primary, 480Y/277V secondary, 45kV BIL
	10	Dry-type, medium-voltage, three-phase, 20-45kV BIL	750-2500	±2-2.5%	208Y/120 to 600Y/347V	1500kVA, 150°C, three-phase, 60Hz, 4160V primary, 480Y/277V secondary, 45kV BIL
8	11	Dry-type, medium-voltage, three-phase, 60-95kV BIL	15-500	±2-2.5%	208Y/120 to 600Y/347V	300kVA, 150°C, three-phase, 60Hz, 12470V primary, 480Y/277V secondary, 95kV BIL
	12	Dry-type, medium-voltage, three-phase, 60-95kV BIL	750-2500	±2-2.5%	208Y/120 to 600Y/347V	1500kVA, 150°C, three-phase, 60Hz, 12470V primary, 480Y/277V secondary, 95kV BIL
10	13	Dry-type, medium-voltage, three-phase, 110-150kV BIL	225-2500	±2-2.5%	208Y/120 to 600Y/347V	2000kVA, 150°C, three-phase, 60Hz, 12470V primary, 480Y/277V secondary, 125kV BIL

\* PC means Product Class (see Chapter 3 of the TSD). PC5, PC7 and PC9 are based on their 3-phase counterparts. They were not addressed in the detailed engineering analysis because of their low sales volume.

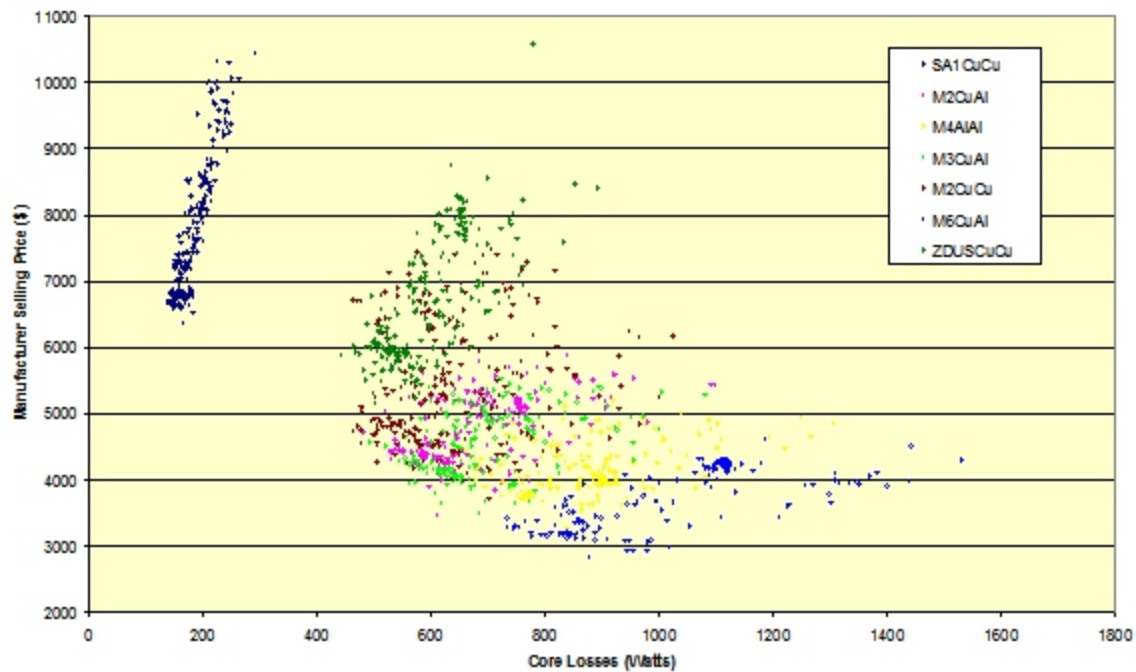
\*\* Universal Taps are 2 above and 4 below 2.5 percent



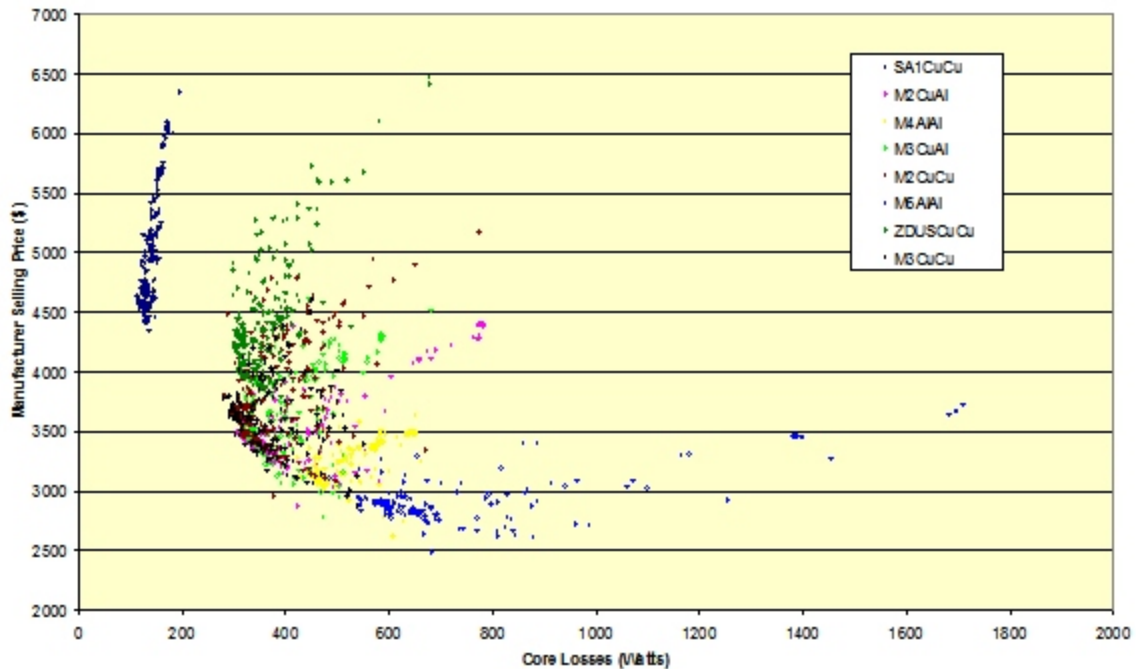
**Figure 5A.1 Scatter Plot of Manufacturer Selling Price and Core Losses for DL1**



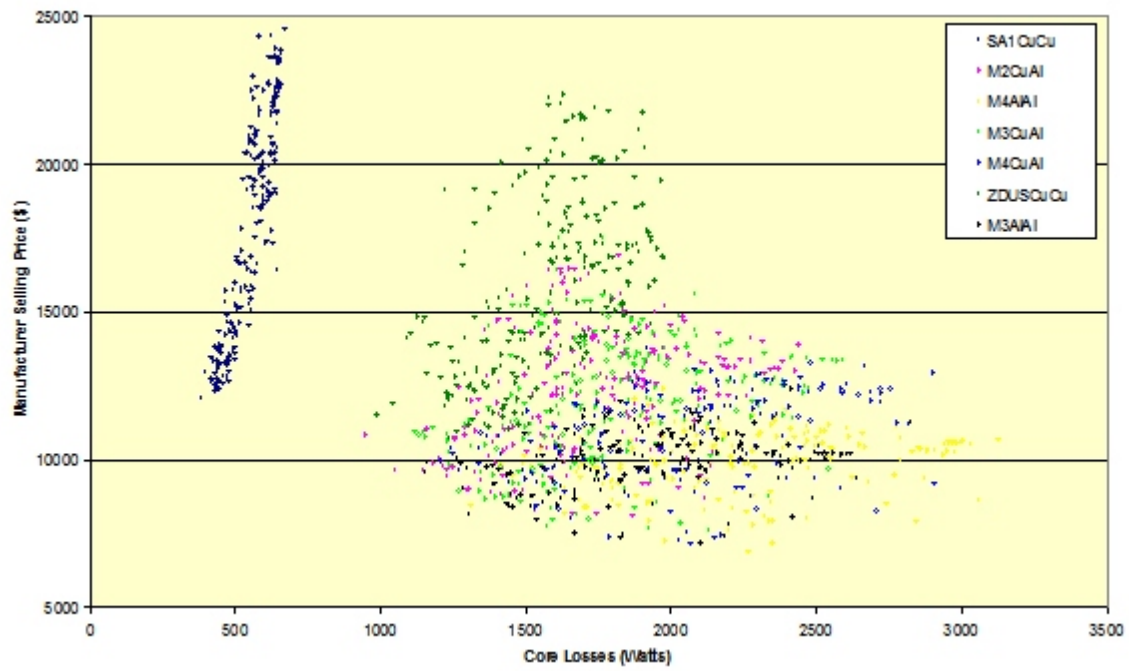
**Figure 5A.2 Scatter Plot of Manufacturer Selling Price and Core Losses for DL2**



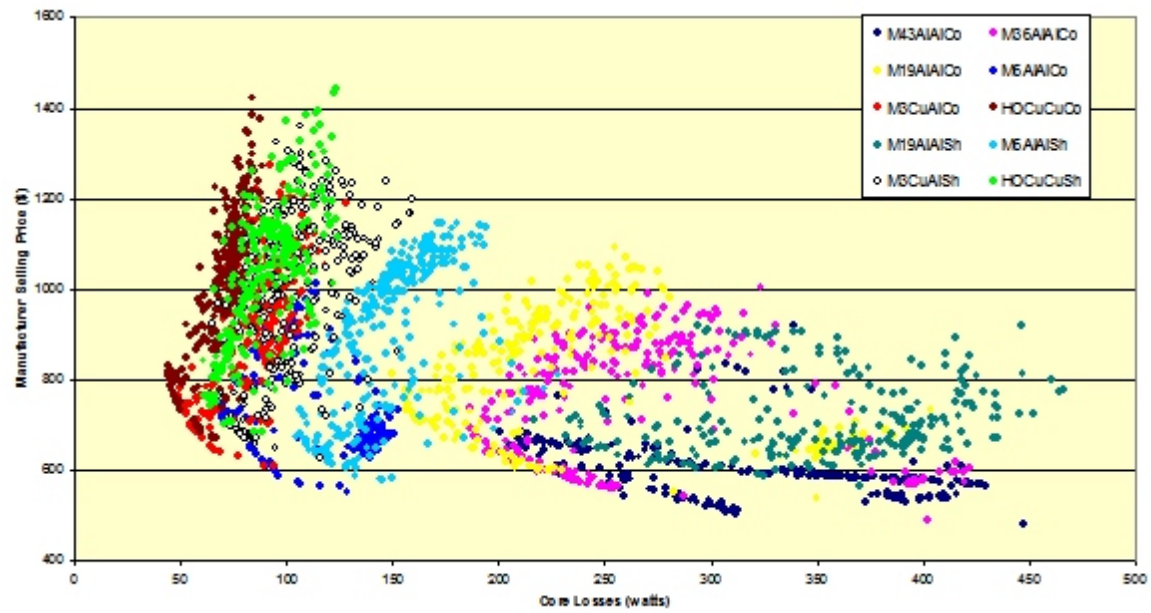
**Figure 5A.3 Scatter Plot of Manufacturer Selling Price and Core Losses for DL3**



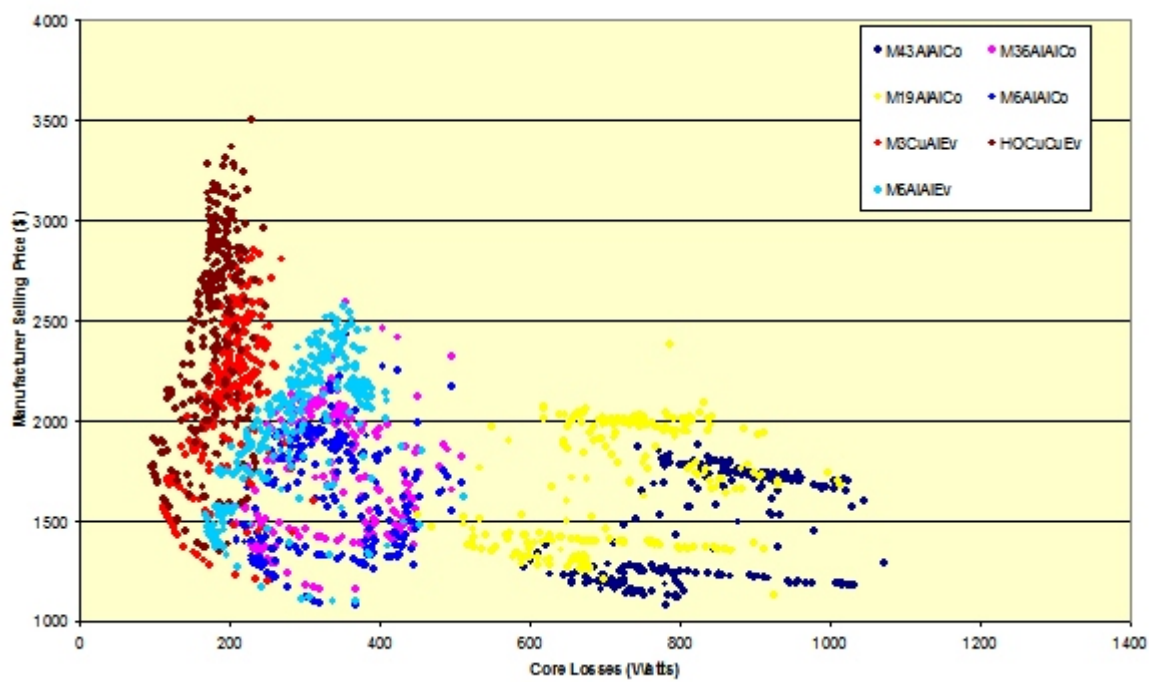
**Figure 5A.4 Scatter Plot of Manufacturer Selling Price and Core Losses for DL4**



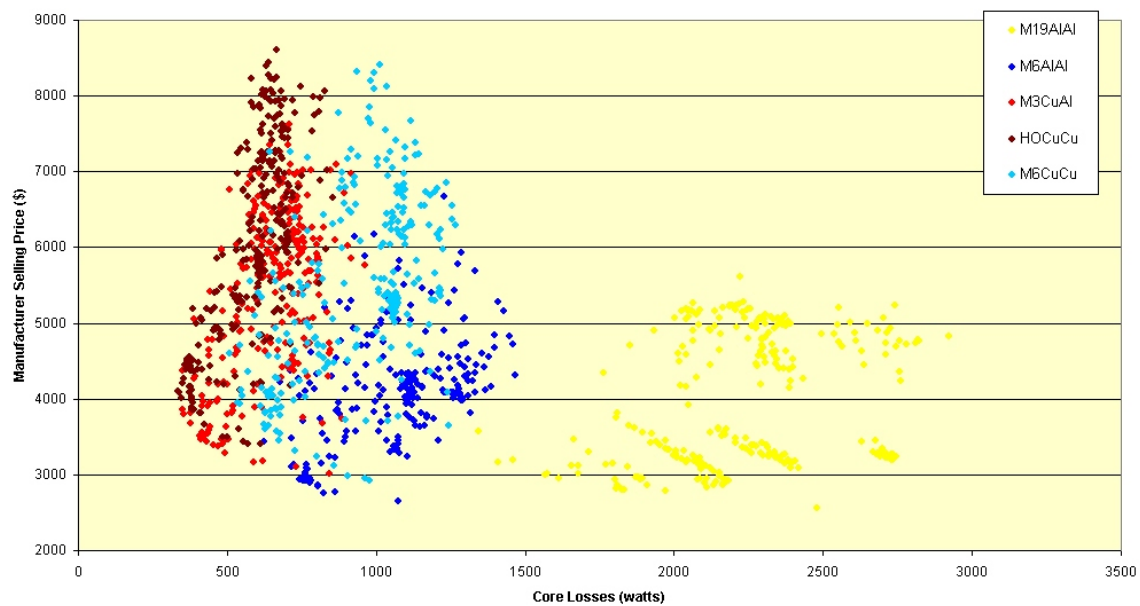
**Figure 5A.5 Scatter Plot of Manufacturer Selling Price and Core Losses for DL5**



**Figure 5A.6 Scatter Plot of Manufacturer Selling Price and Core Losses for DL6**

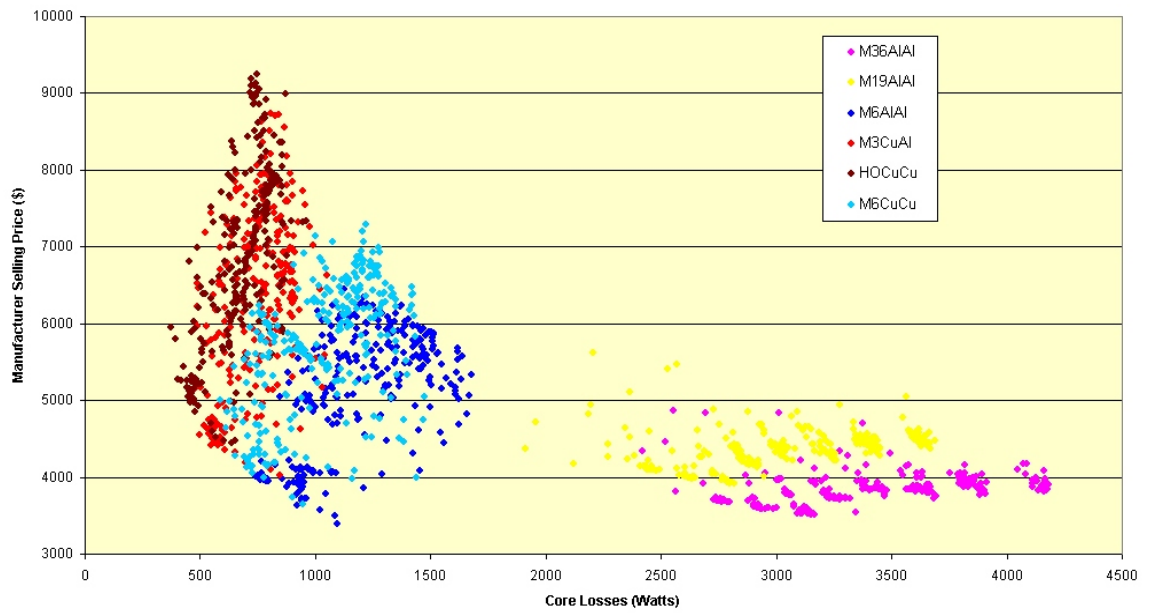


**Figure 5A.7 Scatter Plot of Manufacturer Selling Price and Core Losses for DL7**

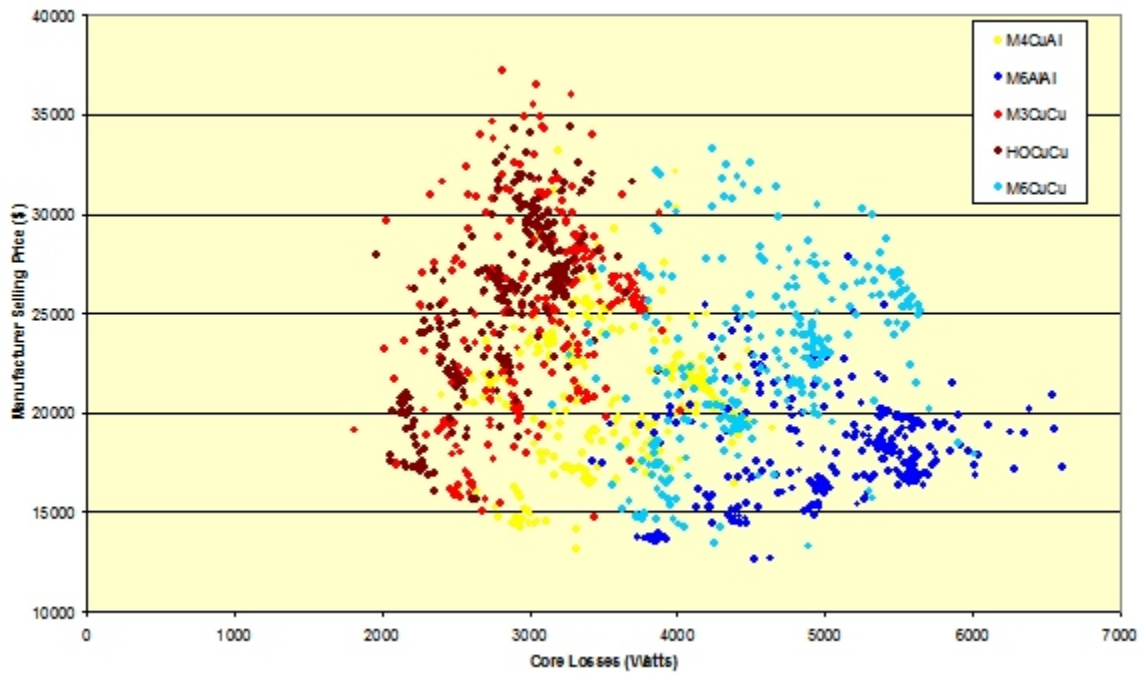


**Figure 5A.8 Scatter Plot of Manufacturer Selling Price and Core Losses for DL8**

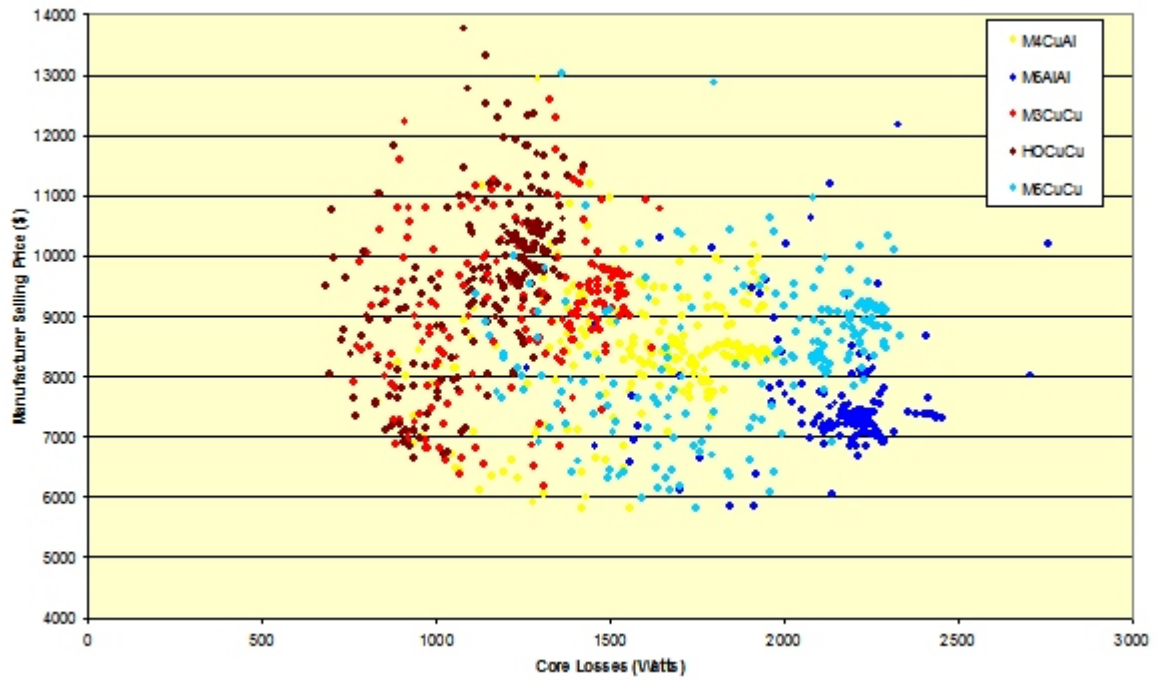




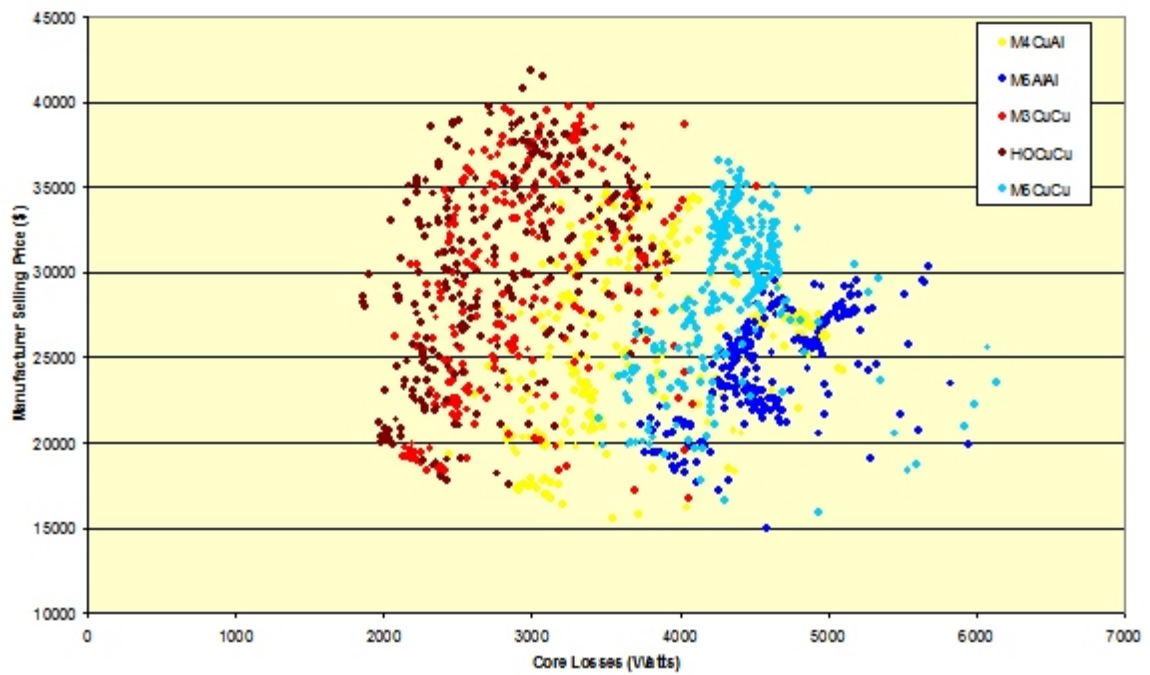
**Figure 5A.9 Scatter Plot of Manufacturer Selling Price and Core Losses for DL9**



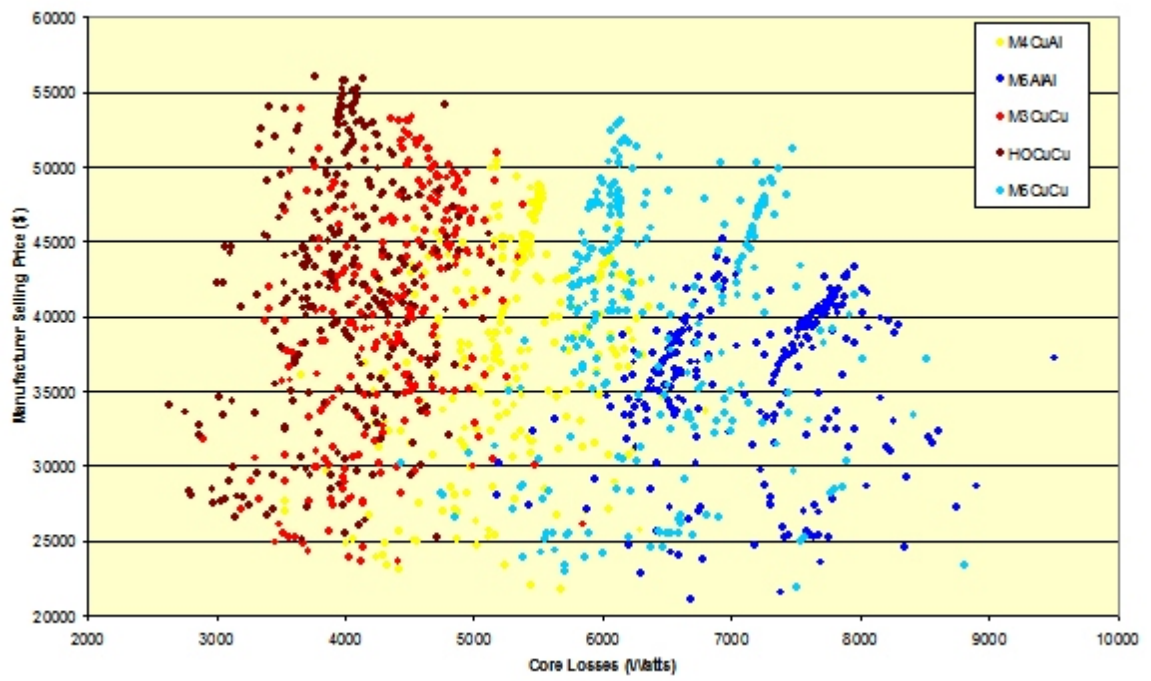
**Figure 5A.10 Scatter Plot of Manufacturer Selling Price and Core Losses for DL10**



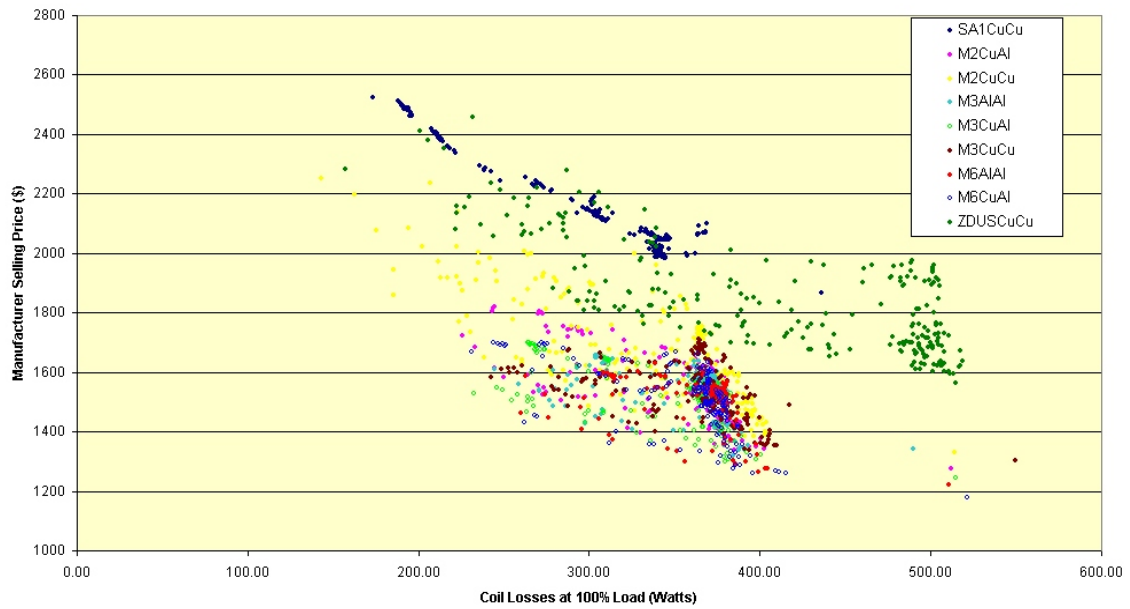
**Figure 5A.11 Scatter Plot of Manufacturer Selling Price and Core Losses for DL11**



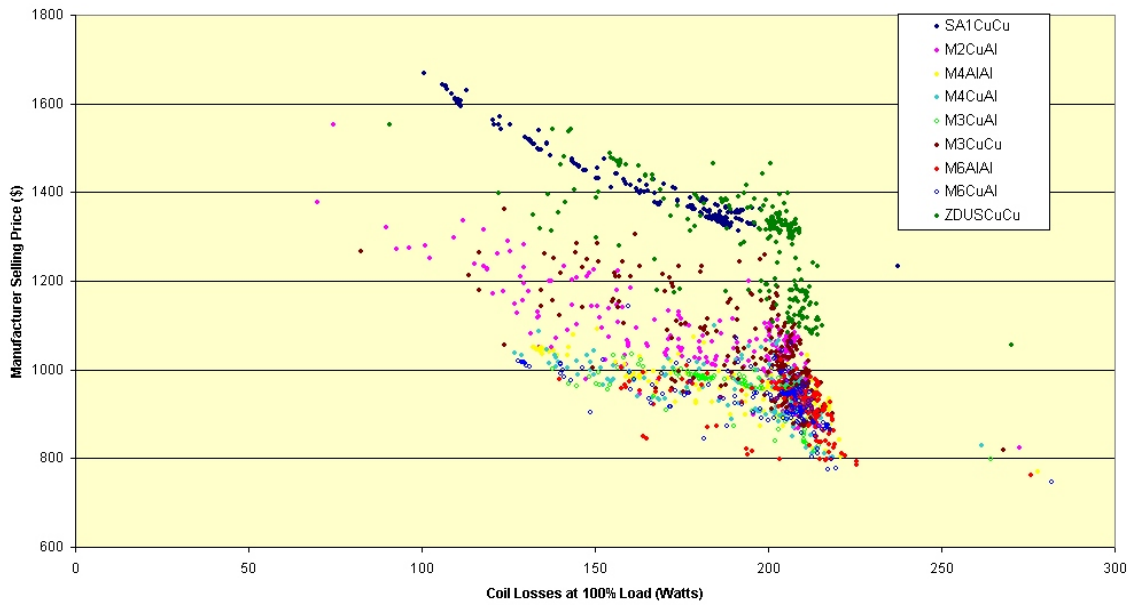
**Figure 5A.12 Scatter Plot of Manufacturer Selling Price and Core Losses for DL12**



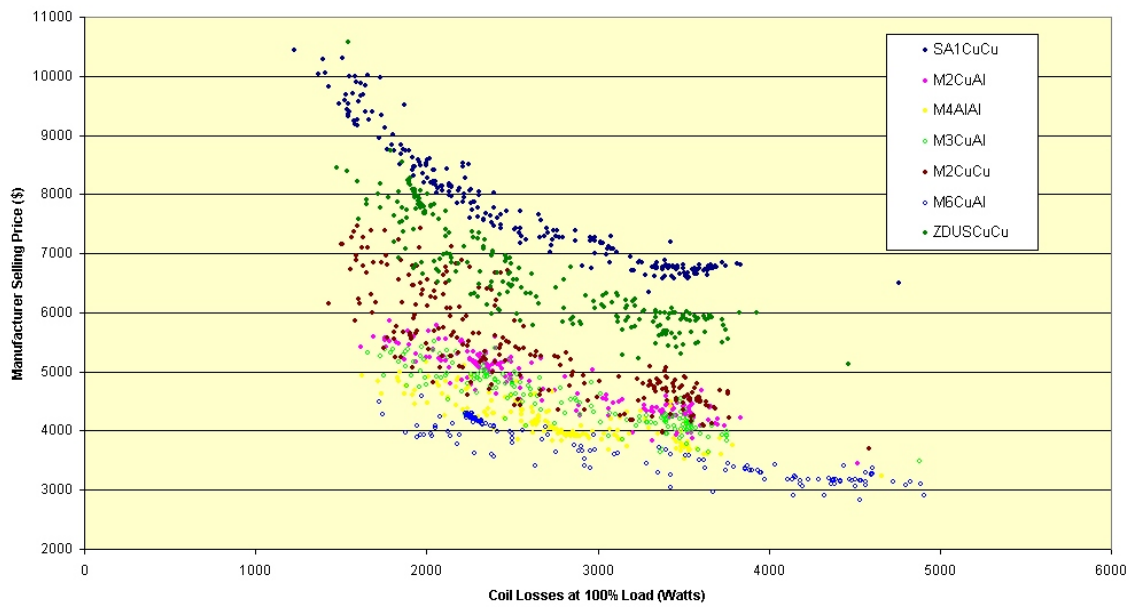
**Figure 5A.13 Scatter Plot of Manufacturer Selling Price and Core Losses for DL13**



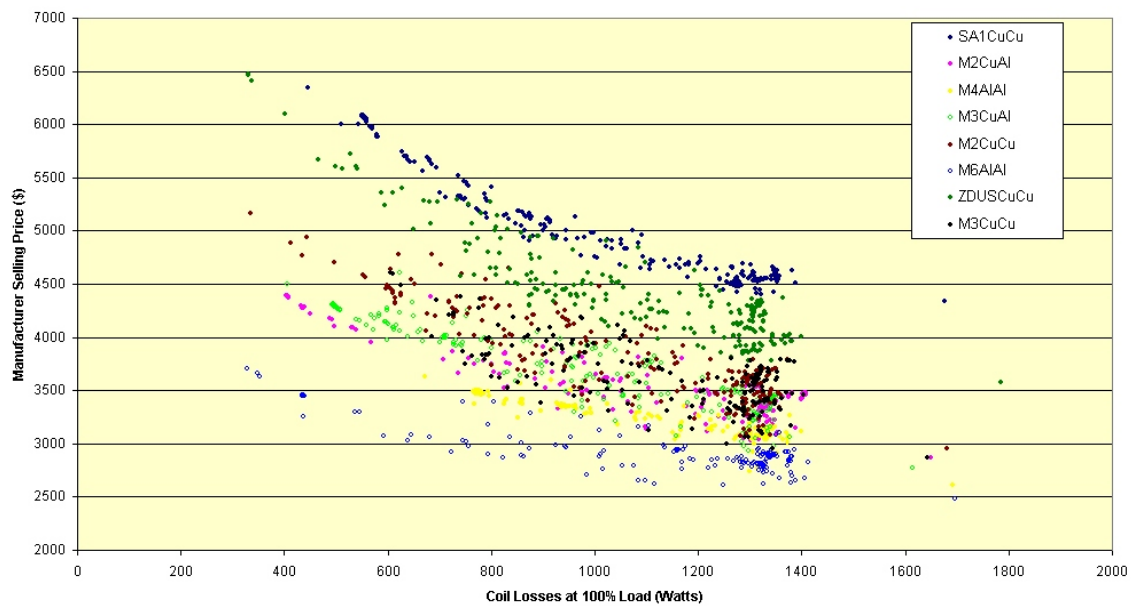
**Figure 5A.14 Scatter Plot of Manufacturer Selling Price and Coil Losses at 100% Load, DL1**



**Figure 5A.15 Scatter Plot of Manufacturer Selling Price and Coil Losses at 100% Load, DL2**



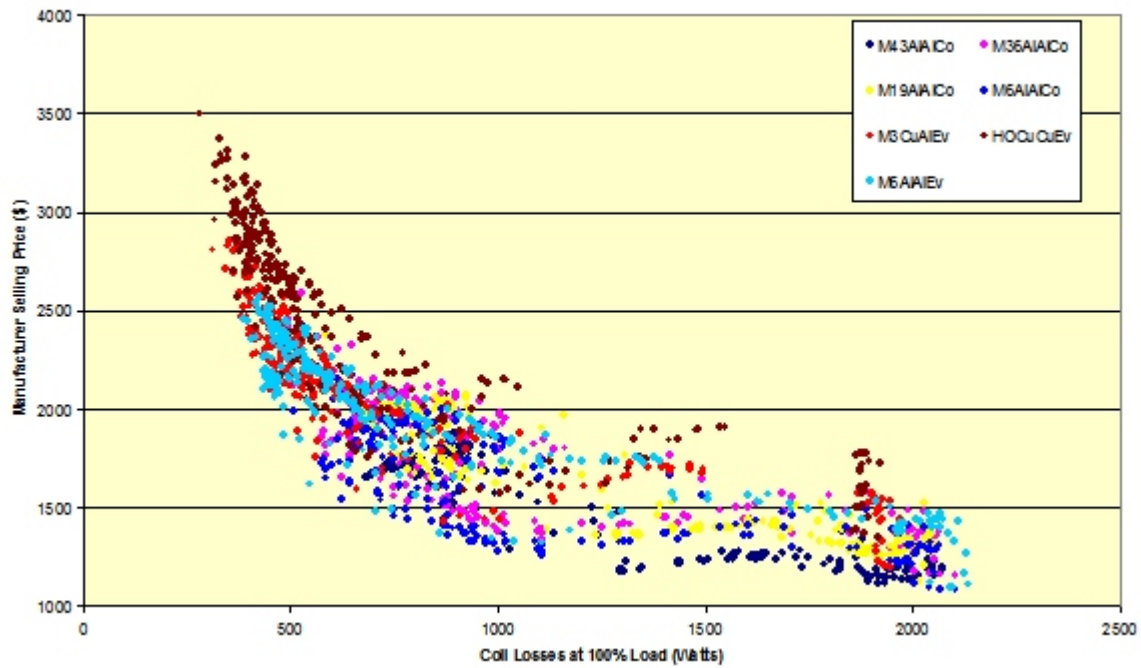
**Figure 5A.16 Scatter Plot of Manufacturer Selling Price and Coil Losses at 100% Load, DL3**



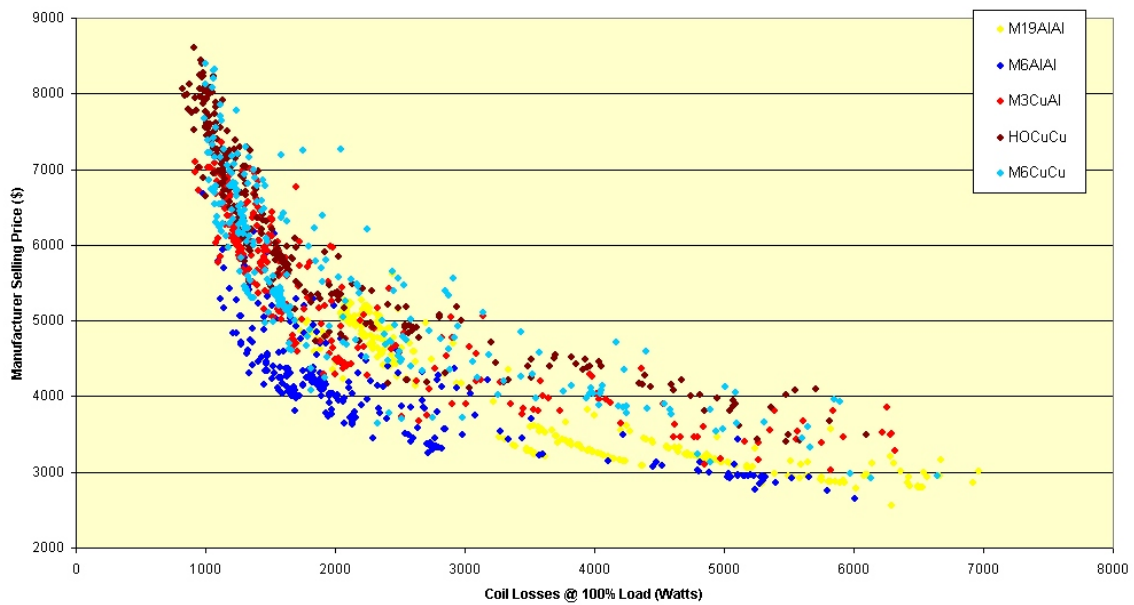
**Figure 5A.17 Scatter Plot of Manufacturer Selling Price and Coil Losses at 100% Load, DL4**



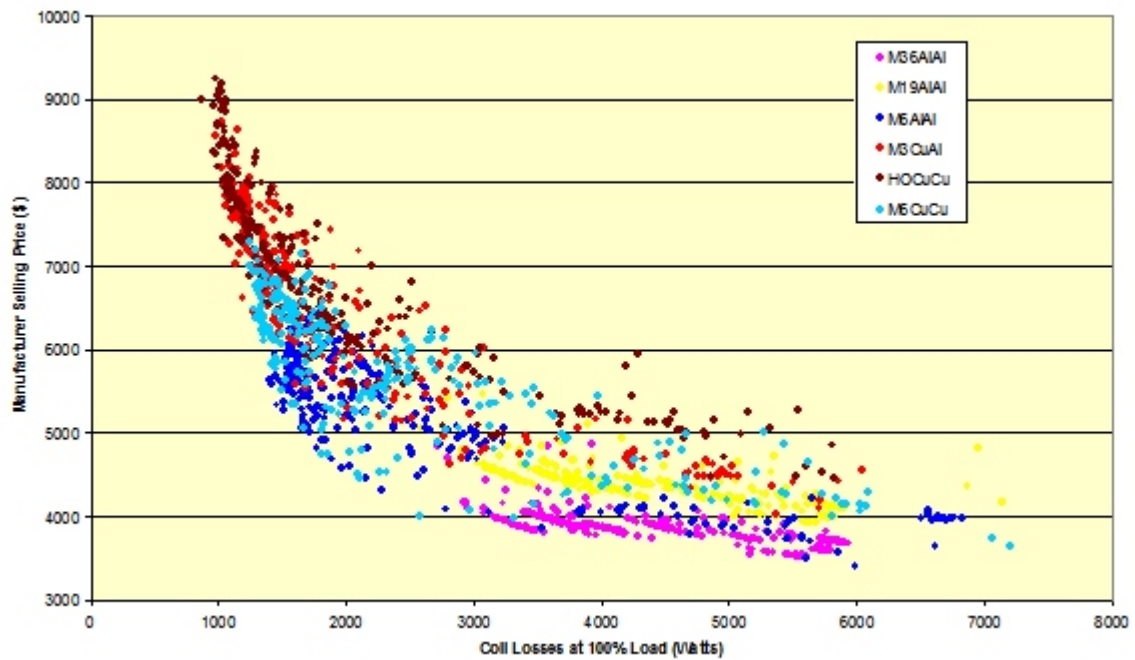




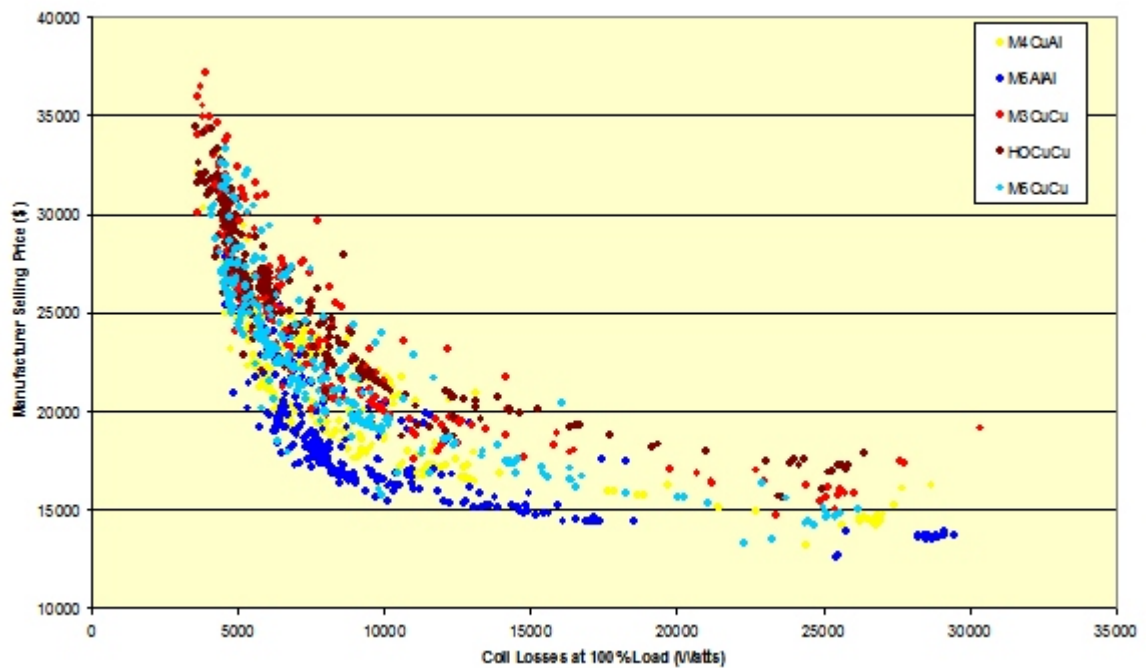
**Figure 5A.20 Scatter Plot of Manufacturer Selling Price and Coil Losses at 100% Load, DL7**



**Figure 5A.21 Scatter Plot of Manufacturer Selling Price and Coil Losses at 100% Load, DL8**

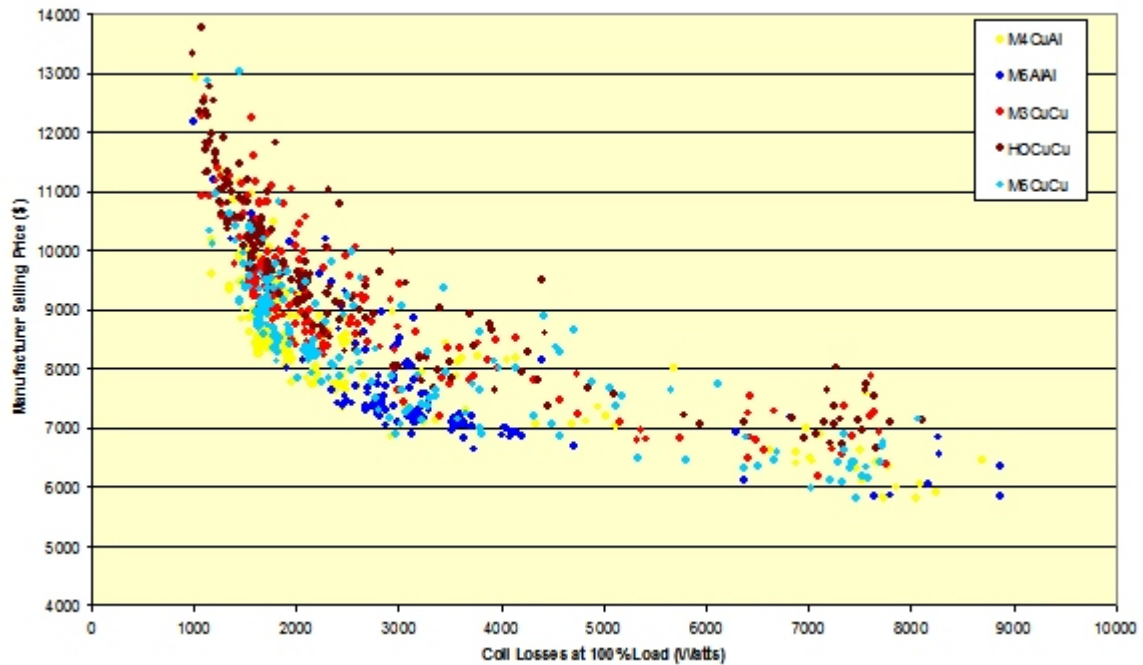


**Figure 5A.22 Scatter Plot of Manufacturer Selling Price and Coil Losses at 100% Load, DL9**

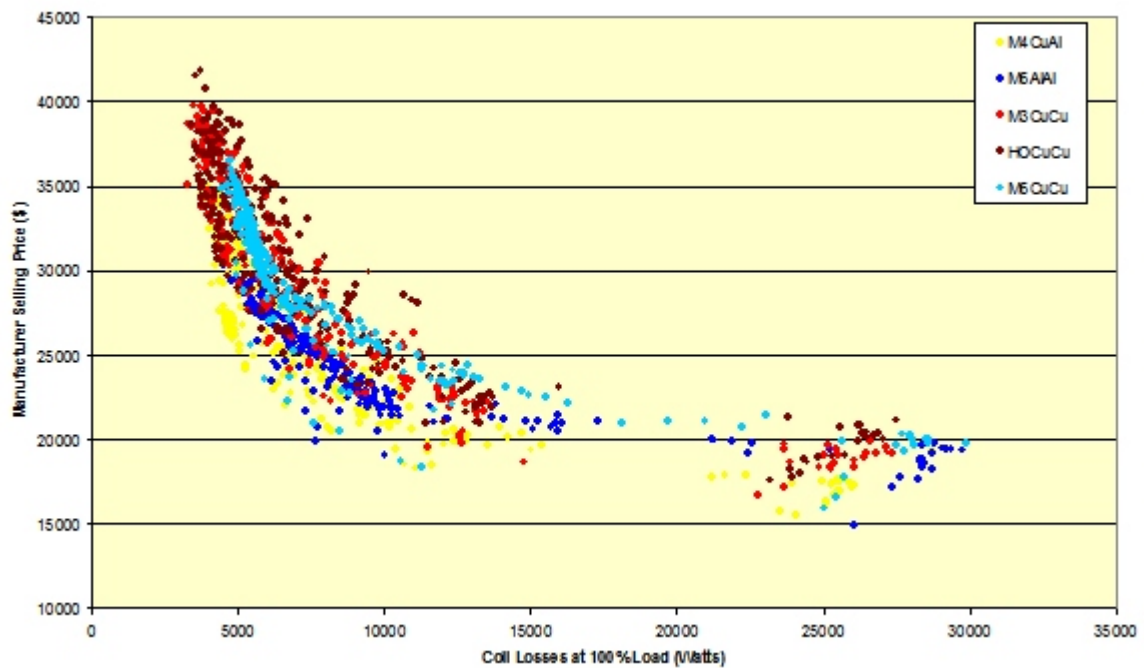


**Figure 5A.23 Scatter Plot of Manufacturer Selling Price and Coil Losses 100% Load, DL10**

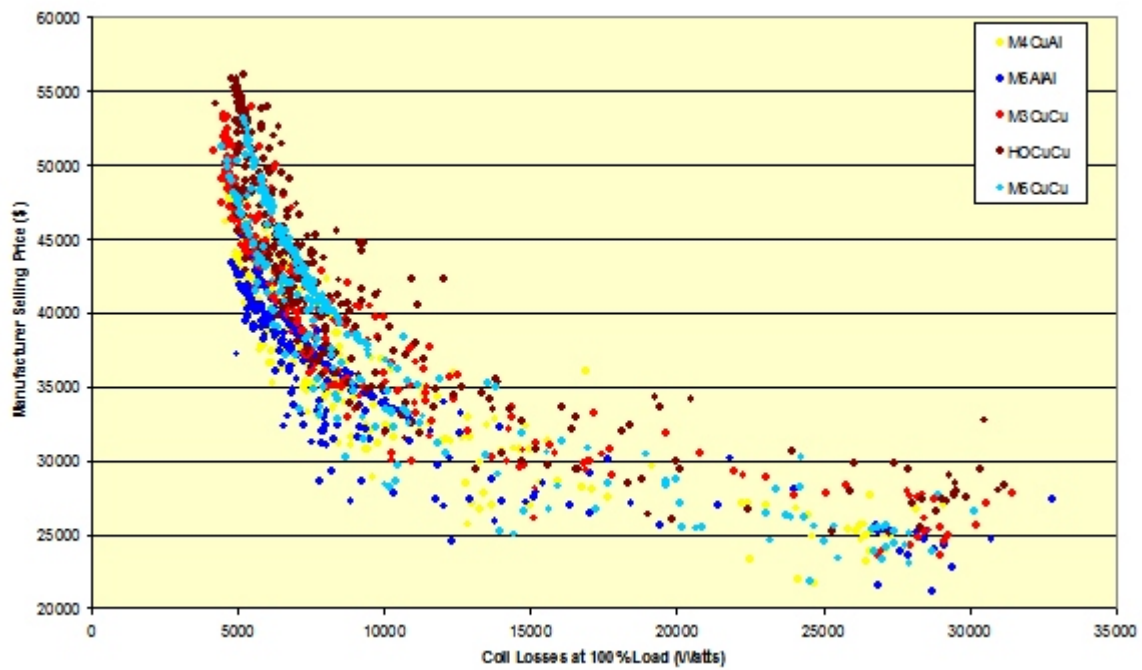




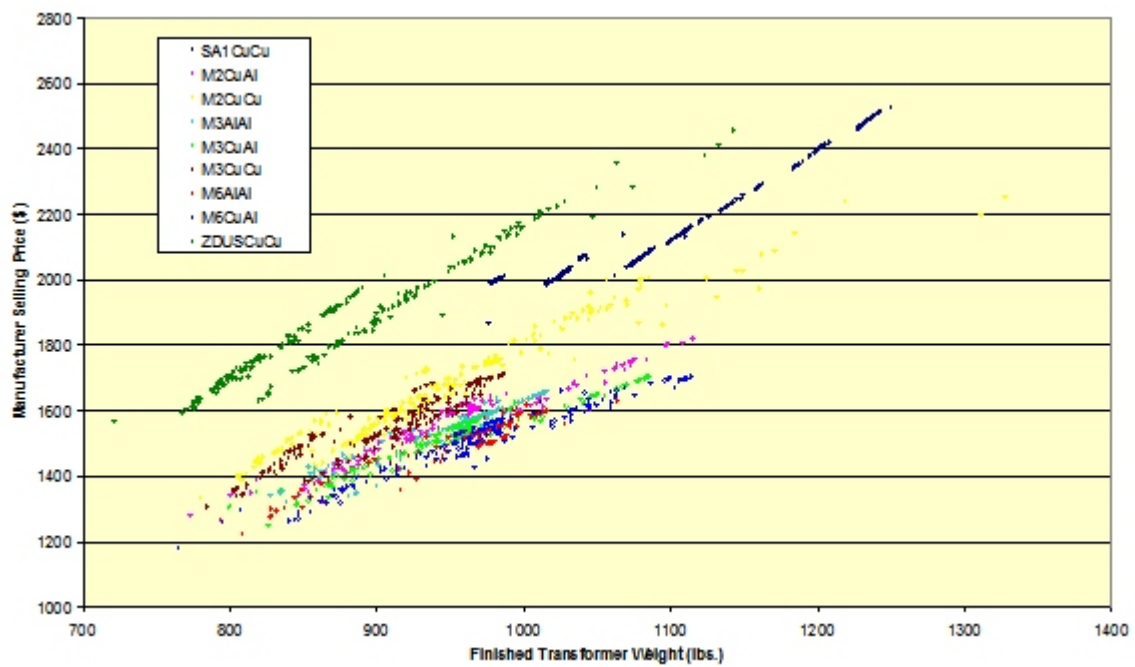
**Figure 5A.24 Scatter Plot of Manufacturer Selling Price and Coil Losses 100% Load, DL11**



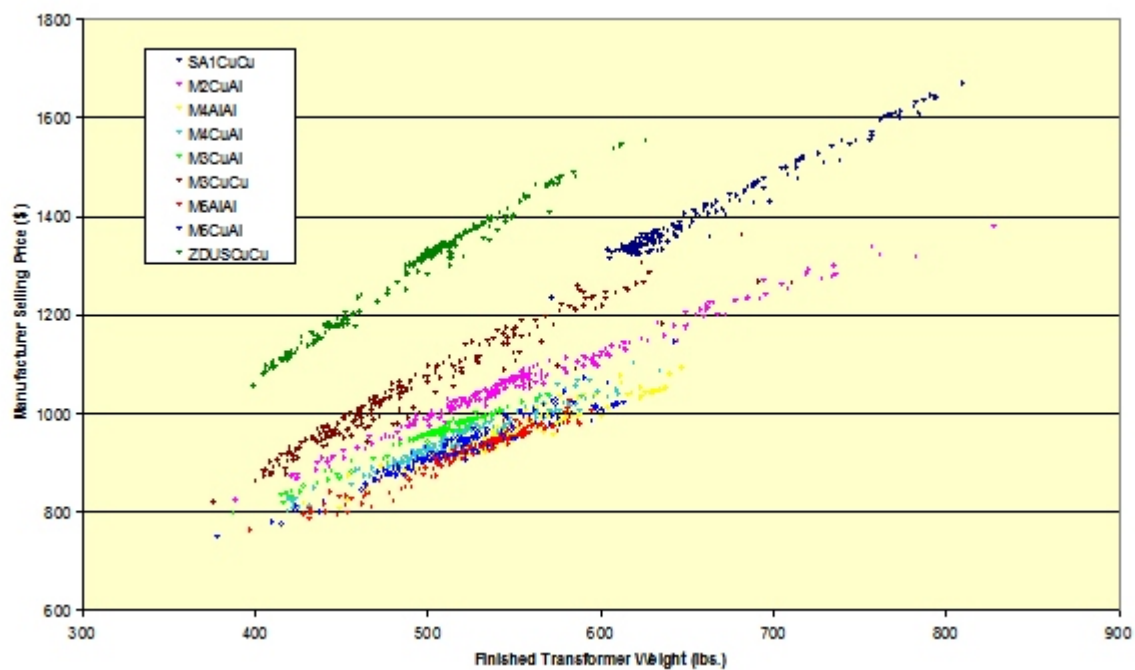
**Figure 5A.25 Scatter Plot of Manufacturer Selling Price and Coil Losses 100% Load, DL12**



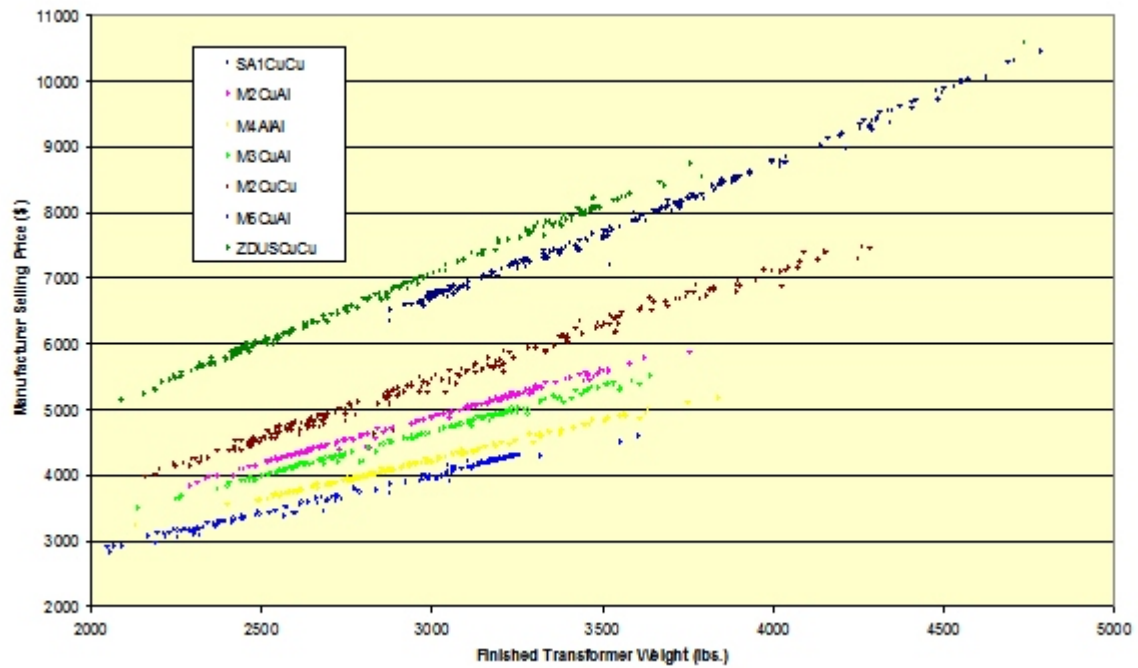
**Figure 5A.26 Scatter Plot of Manufacturer Selling Price and Coil Losses 100% Load, DL13**



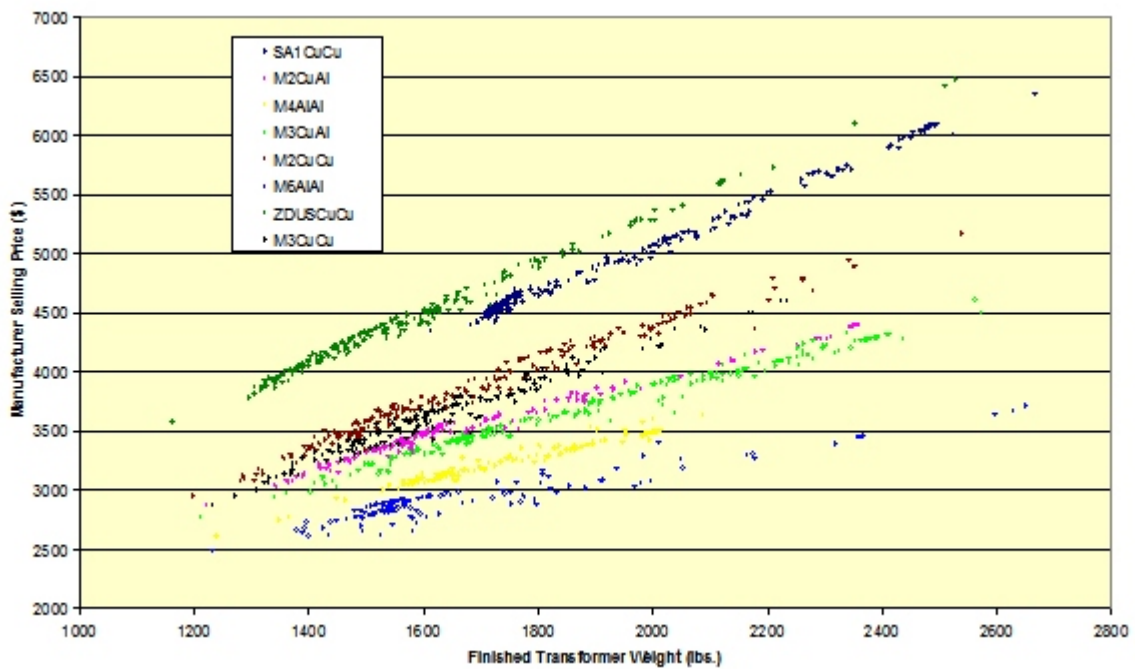
**Figure 5A.27 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL1**



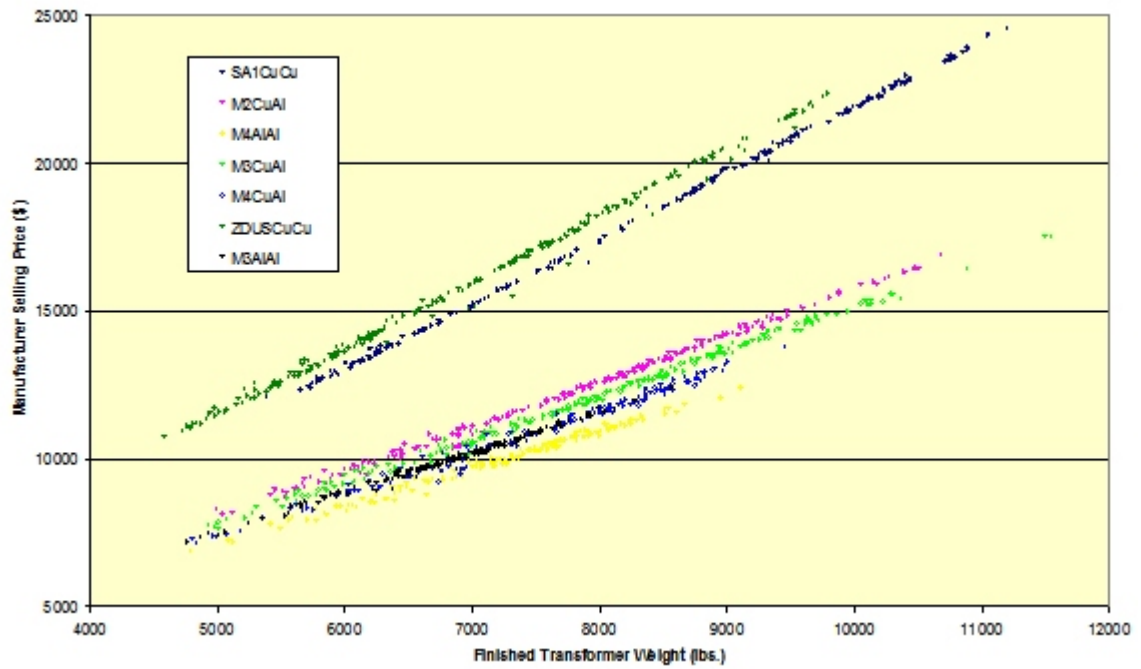
**Figure 5A.28 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL2**



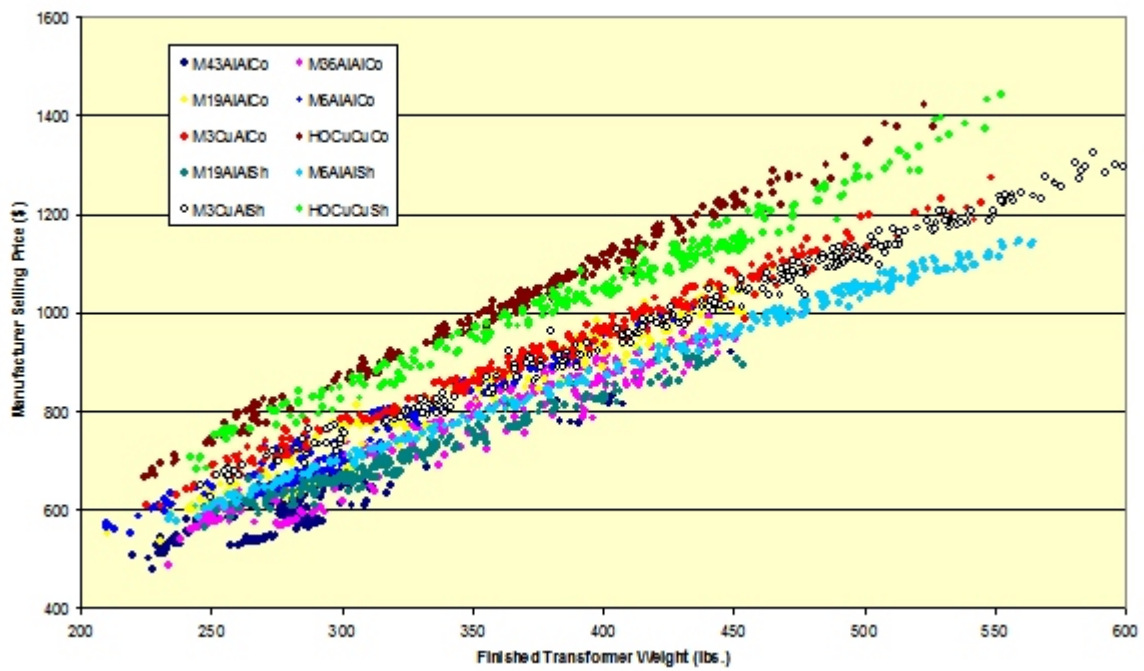
**Figure 5A.29 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL3**



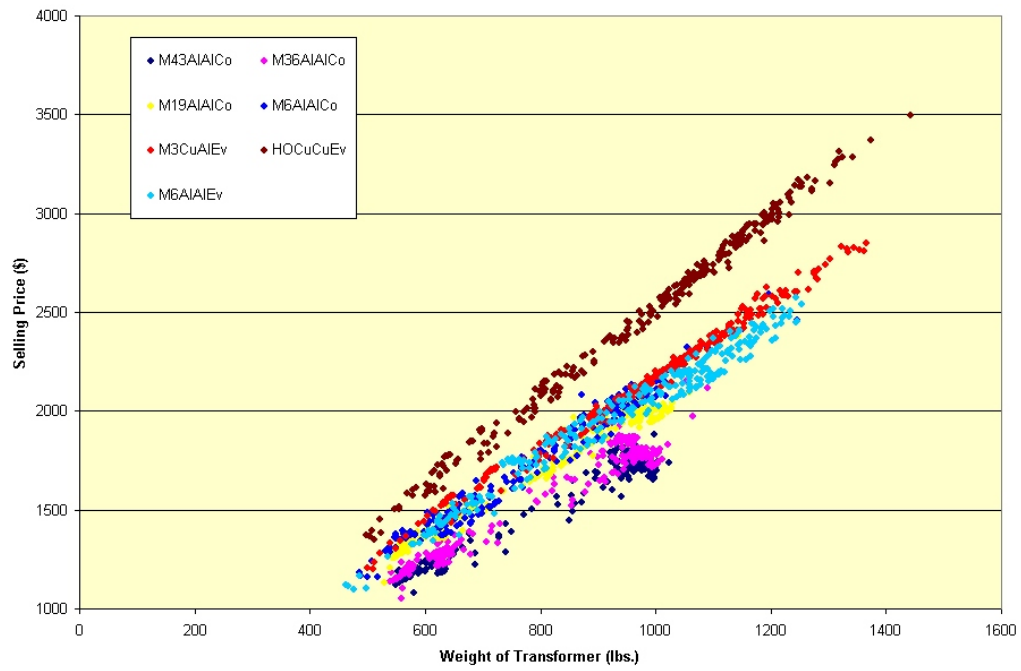
**Figure 5A.30 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL4**



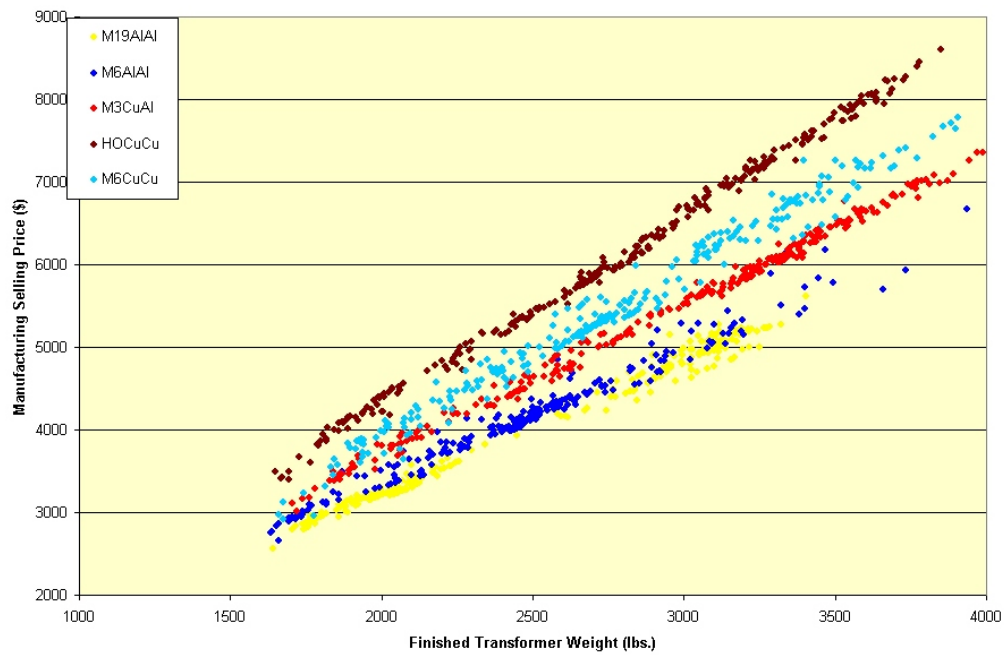
**Figure 5A.31 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL5**



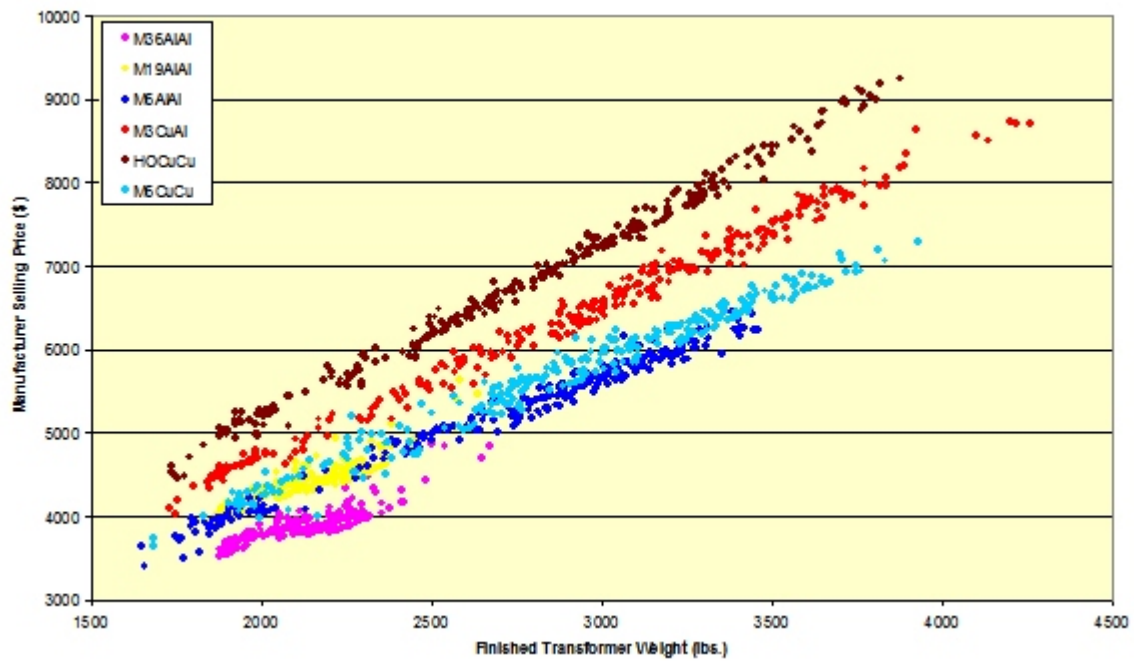
**Figure 5A.32 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL6**



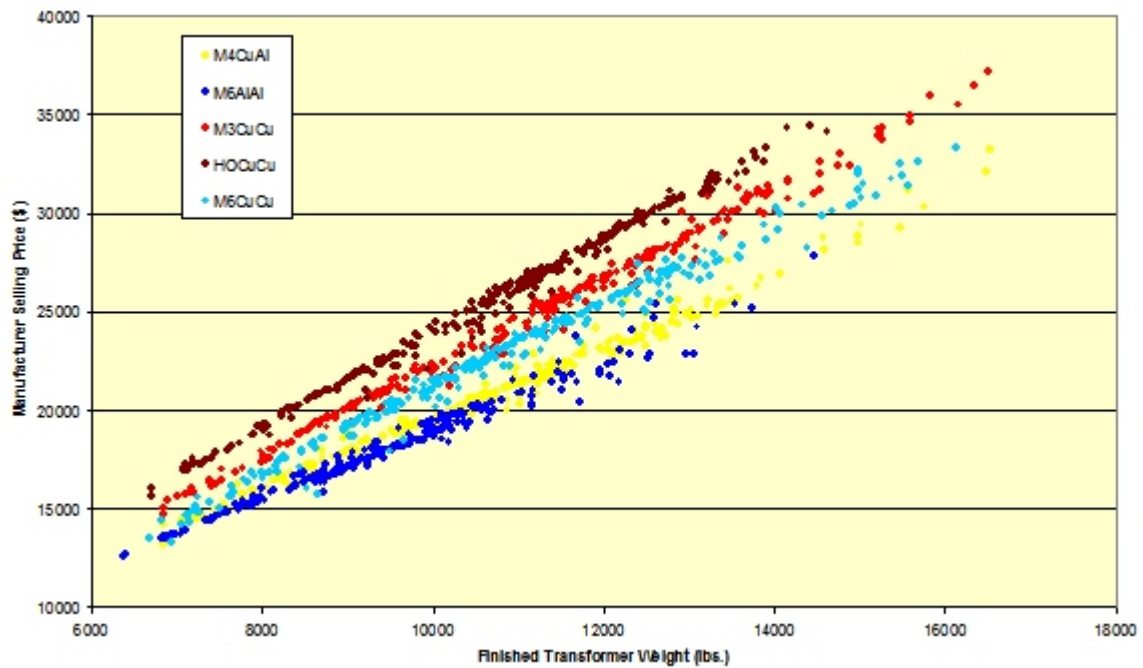
**Figure 5A.33 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL7**



**Figure 5A.34 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL8**

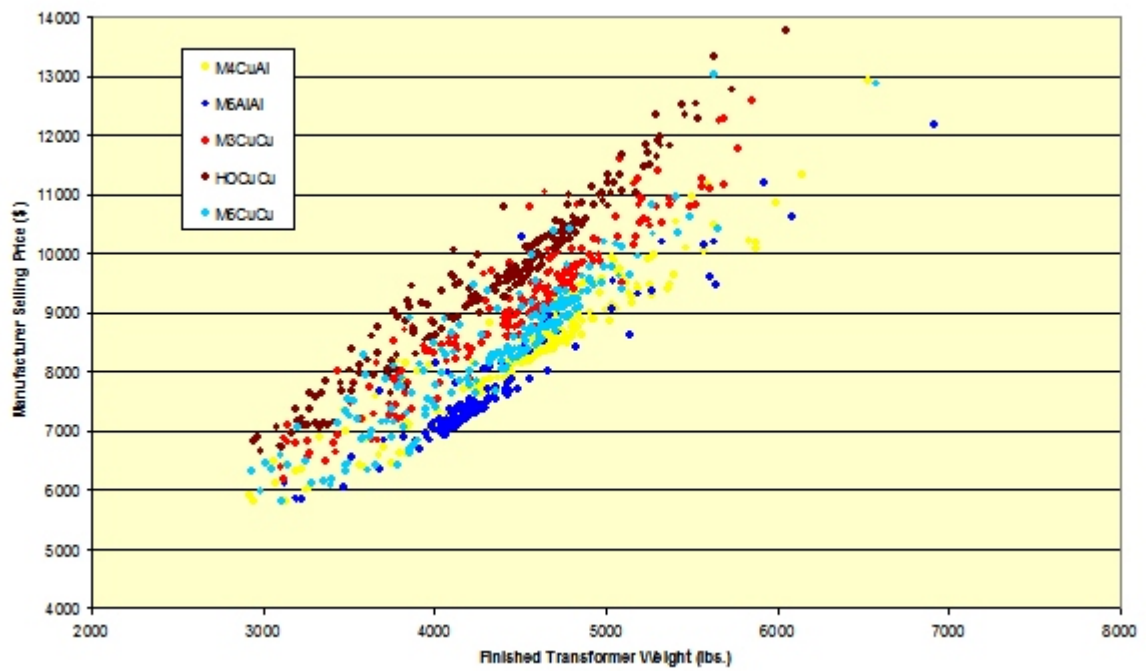


**Figure 5A.35 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL9**

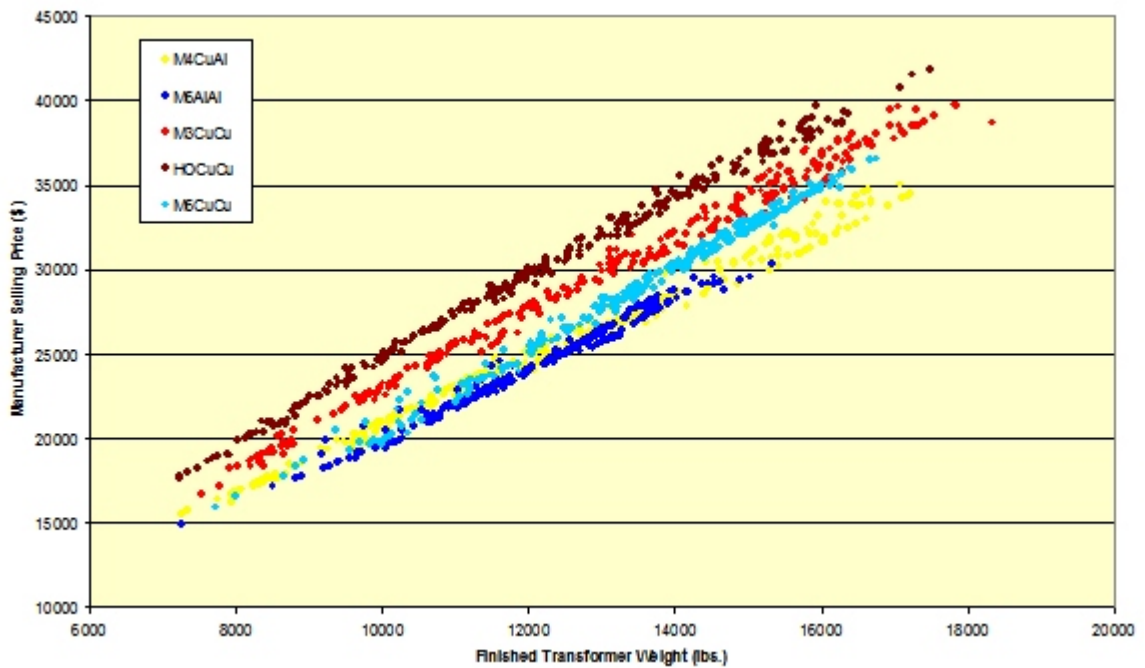


**Figure 5A.36 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL10**



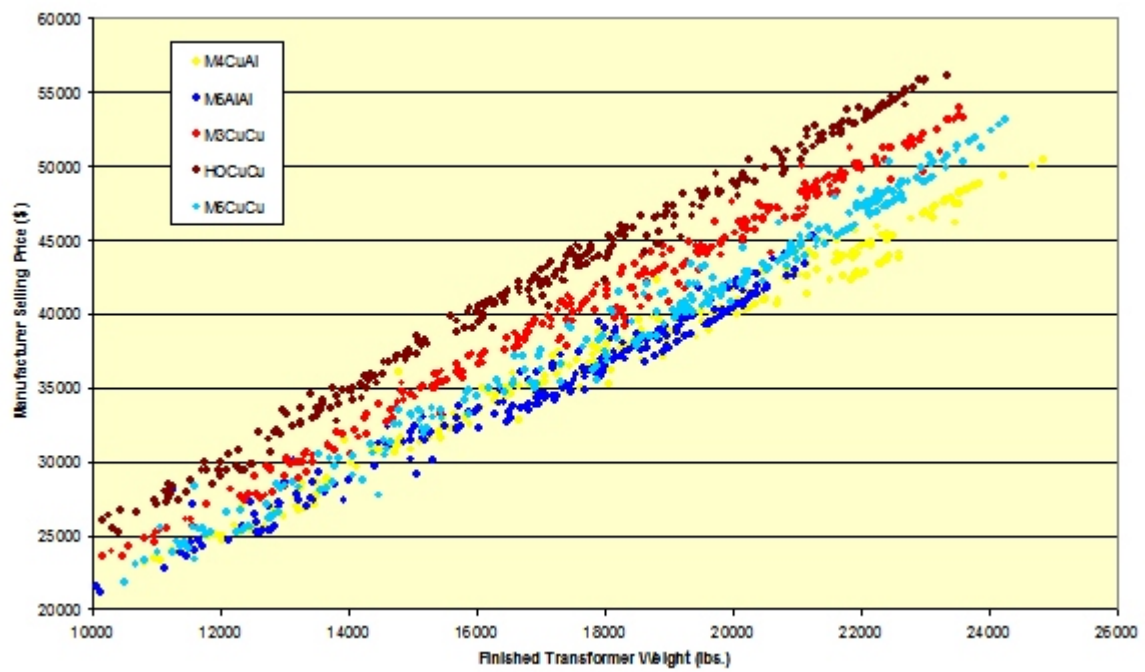


**Figure 5A.37 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL11**



**Figure 5A.38 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL12**





**Figure 5A.39 Scatter Plot of Manufacturer Selling Price and Transformer Weight for DL13**